UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,351	02/10/2004	**Warren M. Farnworth**	2269-6105US(2003-0885.00/	3156

63162 7590 08/08/2008

TRASK BRITT, P.C./ MICRON TECHNOLOGY
P.O. BOX 2550
SALT LAKE CITY, UT 84110

EXAMINER	
KOCH, GEORGE R	

ART UNIT	PAPER NUMBER
1791	

NOTIFICATION DATE	DELIVERY MODE
08/08/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTOMail@traskbritt.com

Office Action Summary	Application No.	Applicant(s)	
	10/775,351	FARNWORTH, WARREN M.	
	Examiner	Art Unit	
	George R. Koch III	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/8/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-3 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Takamori (US 6,319,317 B1).

Takamori discloses system for selectively depositing a material on a previously formed workpiece, comprising a platform (Figure 4, item 52) for supporting the workpiece during a deposition process, a deposition system (item 86) configured to deposit the material on the workpiece to the specific thickness, and a sensing system (Figure 4, item 105) configured to measure over the semiconductor die both an upper surface including a previous material previously deposited thereon, the sensing system further configured to continuously directly measure in a dimension orthogonal to the platform a surface level during material deposition of the material on the upper surface according to direct measurments in the dimension substantially orthogonal to the platform until the surface level of the material is directly measured to be the specific thickness. (see, for example, column 12, lines 50-63). The sensor measures the "spreading state" and therefore is a continuous measurement system. The apparatus can operate on the claimed die and claimed surfaces. This measurement is considered to be a direct measurement in the context of applicant's *direct* measurement, which is measuring the surface data of the substrate and dispense by a transmitter and receiver (as described in applicant's own

specification 0042). The measurement is taking in a dimension substantially orthogonal to the platform (the sensor is positioned and aim in a straight line above the substrate.) Since Takamori is a sensor with a transmitter and receiver, and applicant's sensor is a transmitter and receiver, it anticipates the claim. Since the spreading state is directly proportional to the thickness, a measurement of spread is a measurement of thickness.

This sensing system for measuring an upper surface is consider capable of measuring and upper surface *over a semiconductor die including the upper sufarces and including a previous material previously deposited thereon.* This apparatus in Takamori is considered *capable* of coating any type of substrate, including the claimed *semiconductor die including a previous material previously deposited thereon.*

As to claim 2, Takamori discloses that the deposition system is a spin-coating deposition system (see Figure 2, and especially claim 1, line 2, which discloses that the apparatus including "means for rotating a substrate").

As to claim 3, Takamori discloses that the sensing system includes a sensor (item 105) for both measuring the upper surface of the workpiece (prior to deposition) and for monitoring the surface level of the material deposited on the upper surface of the workpiece (during deposition). Takamori discloses measurement of the "spreading state" of the dispensed solution, which is a measurement of the before, during and after of the thickness or lack of it.

As to claim 8, Takamori discloses coating a semiconductor wafer (recited, for example, at column 1, line 10-11). Takamori is specifically directed to coating a semiconductor wafer with a resist film.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-3 and 8 are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Takamori (US 6,319,317 B1) and Subramanian (US 6,270,579)

Takamori discloses system for selectively depositing a material on a previously formed workpiece, comprising a platform (Figure 4, item 52) for supporting the workpiece during a deposition process, a deposition system (item 86) configured to deposit the material on the workpiece to the specific thickness, and a sensing system (Figure 4, item 105) configured to measure over the semiconductor die both an upper surface including a previous material previously deposited thereon, the sensing system further configured to continuously directly measure in a dimension orthogonal to the platform a surface level during material deposition of the material on the upper surface according to direct measurments in the dimension substantially orthogonal to the platform until the surface level of the material is directly measured to be the specific thickness. (see, for example, column 12, lines 50-63). The sensor measures the "spreading state" and therefore is a continuous measurement system. The apparatus can operate on the claimed die and claimed surfaces. This measurement is considered to be a direct measurement in the context of applicant's *direct* measurement, which is measuring the surface data of the substrate and dispense by a transmitter and receiver (as described in applicant's own specification 0042). The measurement is taking in a dimension substantially orthogonal to the platform (the sensor is positioned and aim in a straight line above the substrate.) Since

Takamori is a sensor with a transmitter and receiver, and applicant's sensor is a transmitter and receiver, it anticipates the claim. Since the spreading state is directly proportional to the thickness, a measurement of spread is arguably a measurement of thickness.

This sensing system for measuring an upper surface is consider capable of measuring and upper surface *over a semiconductor die including the upper surfaces and including a previous material previously deposited thereon.* This apparatus in Takamori is considered *capable* of coating any type of substrate, including the claimed *semiconductor die including a previous material previously deposited thereon.*

It can be argued that Takamori does not go as far as applicant does in defining the sensor techniques, especially with respect to how the sensor measures the thickness. However, Subramanian discloses further details of a sensor that monitors the surface and spreading state of a dispense. The sensor includes a transmitter (item 68) driven by light driver 66, which is directed towards the substrate surface and generates thickness uniformity data which is received by receiver 70 which feeds into measurement system 72 (see column 6, lines 31-59). This sensor directly measures a surface level of the material being deposited on the upper surface until the surface level of the material is directly measured to be a specific thickness of the material (as shown in step 210 of Figure 7, and see column 9, lines 30-35, which recites that "the processor 64 compares the measured thickness uniformity with the desired thickness uniformity, and determines whether or not the proper thickness uniformity has been achieved"). One in the art would appreciate that these techniques would further thickness uniformity. Therefore, it would have been obvious to one of ordinary skill at the time of the invention to have measured specifically the thickness in order achieve desired thickness uniformity.

As to claim 2, Takamori discloses that the deposition system is a spin-coating deposition system (see Figure 2, and especially claim 1, line 2, which discloses that the apparatus including "means for rotating a substrate").

As to claim 3, Takamori discloses that the sensing system includes a sensor (item 105) for both measuring the upper surface of the workpiece (prior to deposition) and for monitoring the surface level of the material deposited on the upper surface of the workpiece (during deposition). Takamori discloses measurement of the "spreading state" of the dispensed solution, which is a measurement of the before, during and after of the thickness or lack of it.

As to claim 8, Takamori discloses coating a semiconductor wafer (recited, for example, at column 1, line 10-11). Takamori is specifically directed to coating a semiconductor wafer with a resist film.

5. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Takamori OR Takamori and Subramanian as applied to claims 1-3 and 8 above, and further in view of Whitman (US 6,642,155).

As to claim 4, Takamori discloses measuring the upper surface of the workpiece and the surface level of the deposited material (see rejection of claim 3 above), but does not disclose using separate sensors for each function.

However, Whitman discloses that it is known in measuring the thickness during spin coating operations to utilize multiple sensors. Whitman uses to the multiple sensors to track coated and uncoated areas in order to properly coordinate the coating operation (as described in column 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time

of the invention to have utilized such sensors in order to achieve coordination of the coating operation.

Response to Arguments

6. Applicant's arguments with respect to claims 1-4 and 8 filed 12/19/2007 have been considered but are unpersuasive. Much of the arguments overlap with prior arguments and are unpersuasive for the same reasons given in the actions mailed 2/8/2008, 7/31/2007 , 5/2/2007, 9/21/2006, etc. Most of applicants arguments are devoted to things the apparatus invention does, not the structure of the apparatus itself. "Configured to deposit" material is merely a statement of intended used.

Additionally, the measurement in Takamori are taken in a dimension substantially orthogonal to the platform (the sensor is positioned and aim in a straight line above the substrate.) (See figures, and the relative positions of item 105 and the substrate/wafer)/

Takamori is considered to be directly measuring, which is considered to be an intended use step that Takamori is considered capable of performing. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

7. Additionally, Subramanian has been applied to show that the particular sensor system as described in applicant's specification is known.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (571) 272-1230 (TDD only). If the applicant cannot make a direct TDD-to-TDD call, the applicant can communicate by calling the Federal Relay Service at 1-866-377-8642 and giving the operator the above TDD number. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/George R. Koch III/
Primary Examiner, Art Unit 1791

7/31/2008